

1

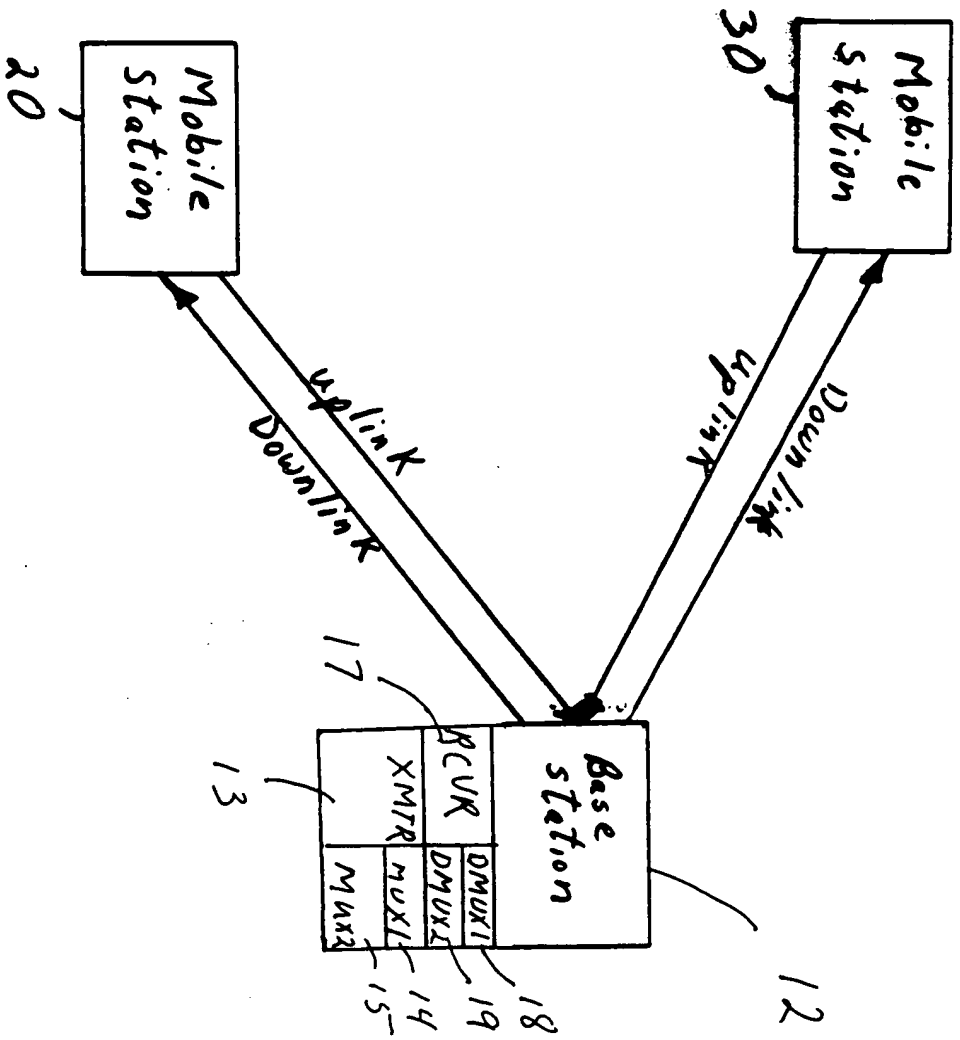
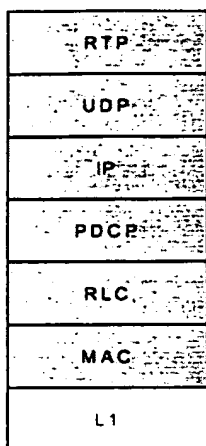


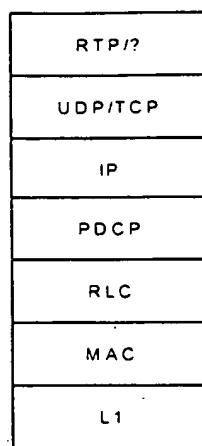
FIG. 1

Optimized Speech



(a)

RT Data and nRT Data

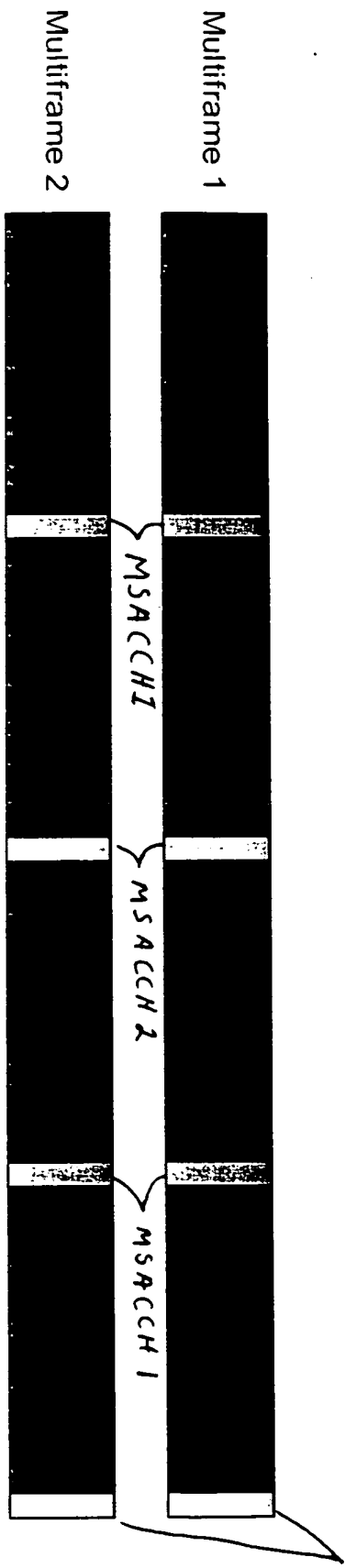


(b)

Note:: Shaded Parts are eliminated from the overhead of speech frames

FIG. 2

MSACCH 2



- UTCH/HS Channel 1 ■ MSACCH Channel 1
- UTCH/HS Channel 2 ■ MSACCH Channel 2

For data traffic channels, there is no MSACCH, and all allocated bursts in the time slot are available for traffic.

F16.3

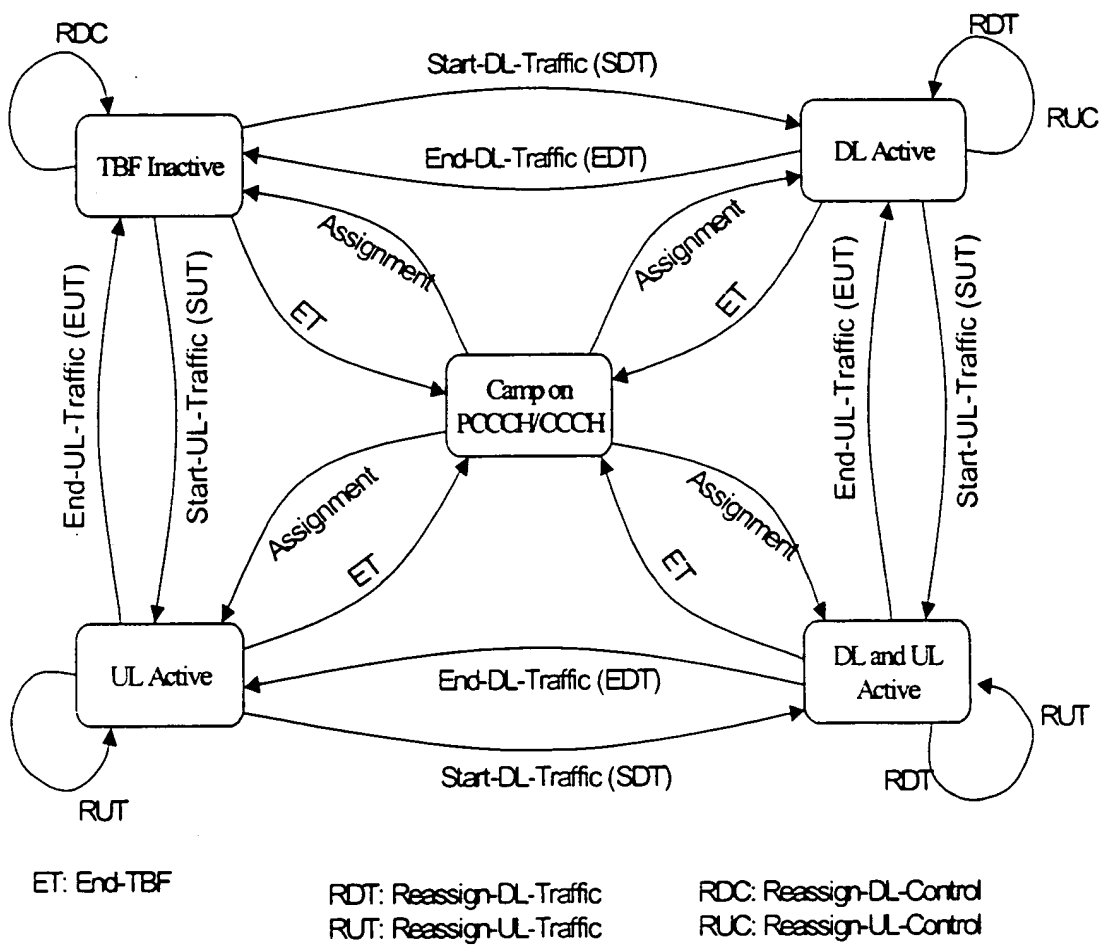


FIG. 4

[illegible]

RT TBF State	Traffic Activity		TCH Channel Assignment		Control Channel Assignment	
	UL	DL	UL	DL	UL	DL
TBF Inactive	idle	idle			FRACH FACKCH UPRCH UBMCH	FASSCH DPRCH DBMCH
UL Active	active	idle	UTCH/ (B)FACCH / MSACCH		FRACH FACKCH UBMCH	FASSCH DPRCH DBMCH
DL Active	idle	active		DTCH/ (B)FACCH / MSACCH	FRACH FACKCH UPRCH UBMCH	FASSCH DBMCH
UL + DL Active	active	active	UTCH/ (B)FACCH / MSACCH	DTCH/ (B)FACCH / MSACCH	FRACH FACKCH UBMCH	FASSCH DBMCH

FIG. 5



Procedures	RT TBF State			
	Inactive	UL Active	DL Active	DL+UL Active
Reassign DL Control (RDC)	x	x		
Reassign UL Control (RUC)	x		x	
Start DL Traffic (SDT)	x	x		
End DL Traffic (EDT)			x	x
Reassign DL Traffic (RDT)			x	x
Start UL Traffic (SUT)	x		x	
End UL Traffic (EUT)		x		x
Reassign UL Traffic (RUT)		x		x
End TBF (ET)	x	x	x	x
Start new TBF (ST)	x	x	x	x

FIG. 6



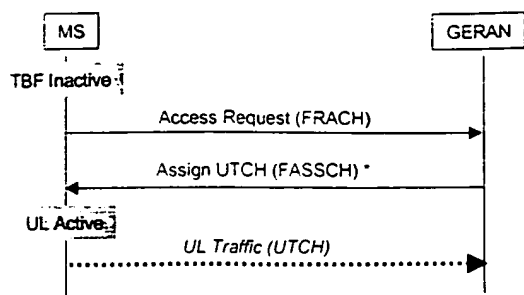
Message	Channel During Uplink Traffic	Channel with no Uplink Traffic
Access Request	BFACCH	FRACH
Acknowledge to Assignment	BFACCH	FACKCH
AMR Mode Request	UTCH	UPRCH
SID Update	N/A	UPRCH
Neighbor Measurement Report	MSACCH	UPRCH
RLC Signaling	UTCH	UBMCH
End TBF Request	BFACCH	FRACH

FIG. 7

00000000000000000000000000000000

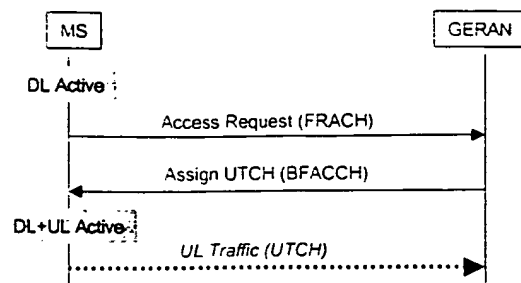
Downlink Burst Message	Information Elements
Assign UTCH	ARI, DMT, TBFI, CID, CTS, PH, SD
Deferred Assign UTCH	ARI, DMT, TBFI, RRBp, delay
Assign DTCH	ARI, DMT, TBFI, RRBp, CID, CTS, PH, SD
Assign UPRCH	ARI, DMT, RRBp, CID, CTS, OFF
Assign DPRCH	ARI, DMT, RRBp, CID, CTS, OFF
Assign FRACH	ARI, DMT, RRBp, CID, CTS, PH
Assign FACKCH	ARI, DMT, RRBp, CID, CTS, PH
Assign FASSCH	ARI, DMT, RRBp, CID, CTS, PH
End TBF Command	ARI, DMT, TBFI, RRBp, reason

FIG. 9



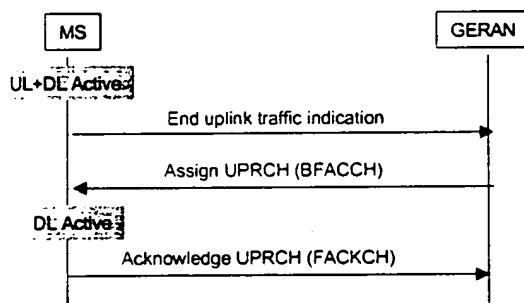
(a)

- Variation: Deferred Assign UT

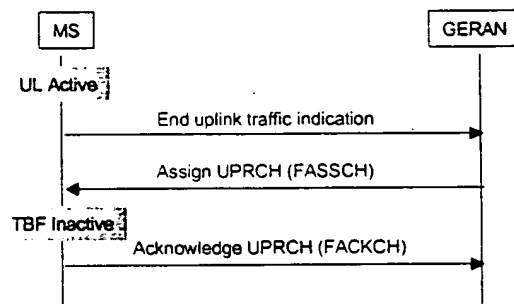


(b)

FIG 11



(a)



(b)

FIG 12

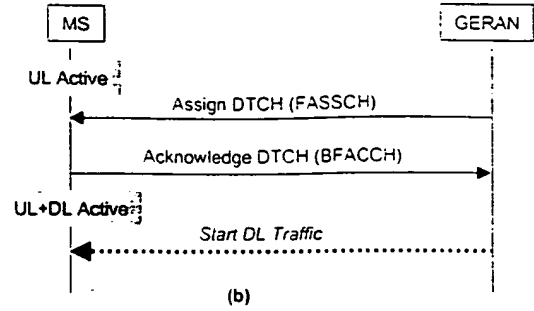
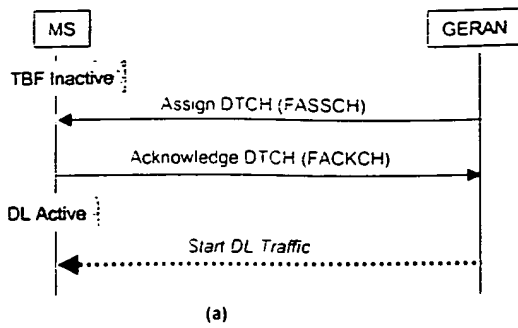


FIG. 13

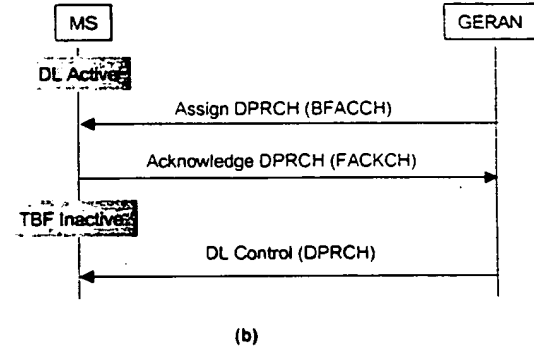
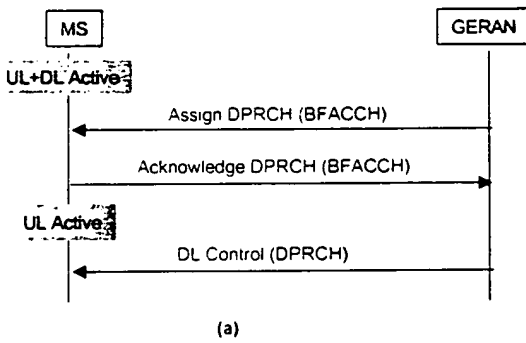


FIG. 14

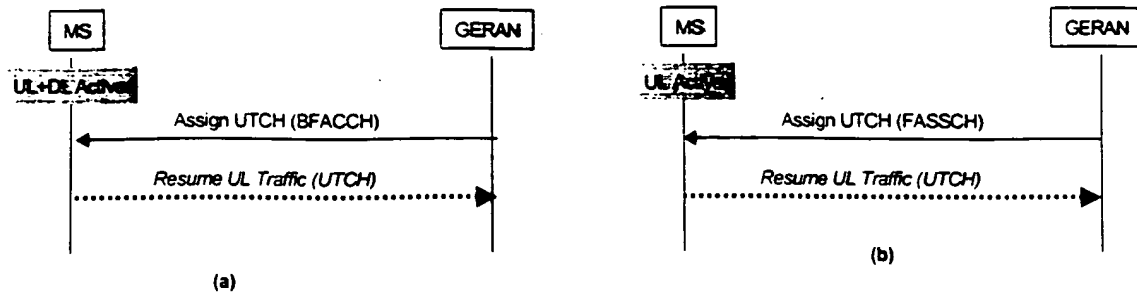


FIG. 15

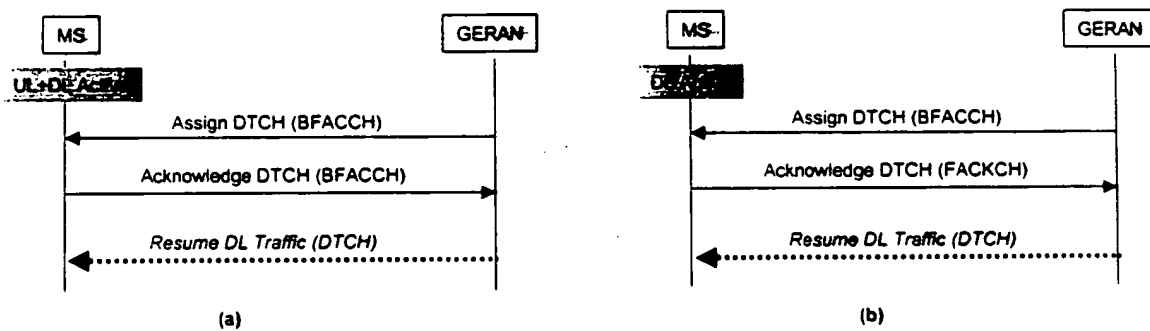
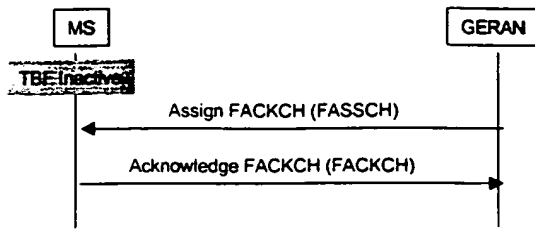
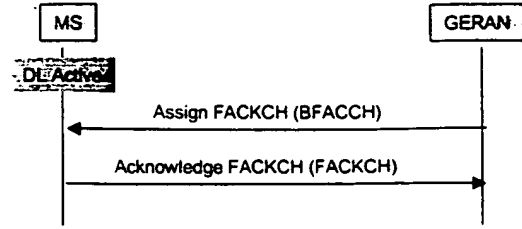


FIG. 16

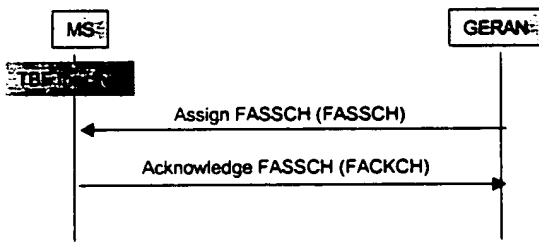


(a)

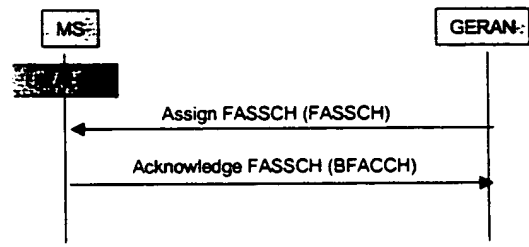


(b)

FIG. 17



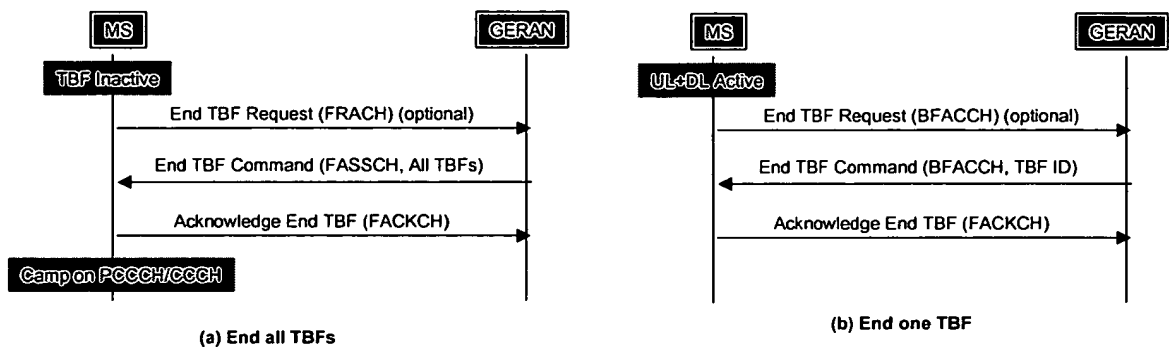
(a)



(b)

FIG. 18

FIG 19



Page 1 of 1

2 2 0 2

 **SACCH Channel 1** **SACCH Channel 2**

FIG. 20

0 2 0 0 2

0 2 0 5

 **MSACCH Channel 1** **MSACCH Channel 2**

FIG. 21

[illegible]

D(0, 0123)	D(1, 0123)	D(2, 0123)	D(3, 0123)	D(4, 0123)	D(5, 0123)	D(6, 0123)	D(7,0123)
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D(0, 4567)	D(1, 4567)	D(2, 4567)	D(3, 4567)	D(4, 4567)	D(5, 4567)	D(6, 4567)	D(7, 4567)
------------	------------	------------	------------	------------	------------	------------	------------

D(i, 0123) Downlink time slot i, bursts 0123... D(i, 4567) Downlink time slot i, bursts 4567...

☐ Resources to which a downlink talkspurt may be allocated

☐ Transmissions during burst 7 on uplink time slot 5 overlap with burst 0 on downlink time slot 0

FIG. 25

Frames	Time slots							
	D(0, even)	D(1, even)	D(2, even)	D(3, even)	D(4, even)	D(5, even)	D(6, even)	D(7, even)
	U(5, odd)	U(6, odd)	U(7, odd)	U(0, even)	U(1, even)	U(2, even)	U(3, even)	U(4, even)
	D(0, odd)	D(1, odd)	D(2, odd)	D(3, odd)	D(4, odd)	D(5, odd)	D(6, odd)	D(7, odd)
	U(5, even)	U(6, even)	U(7, even)	U(0, odd)	U(1, odd)	U(2, odd)	U(3, odd)	U(4, odd)
	D(0, even)	D(1, even)	D(2, even)	D(3, even)	D(4, even)	D(5, even)	D(6, even)	D(7, even)
	U(5, odd)	U(6, odd)	U(7, odd)	U(0, even)	U(1, even)	U(2, even)	U(3, even)	U(4, even)
	D(0, odd)	D(1, odd)	D(2, odd)	D(3, odd)	D(4, odd)	D(5, odd)	D(6, odd)	D(7, odd)
	U(5, even)	U(6, even)	U(7, even)	U(0, odd)	U(1, odd)	U(2, odd)	U(3, odd)	U(4, odd)
	D(0, even)	D(1, even)	D(2, even)	D(3, even)	D(4, even)	D(5, even)	D(6, even)	D(7, even)
	U(5, odd)	U(6, odd)	U(7, odd)	U(0, even)	U(1, even)	U(2, even)	U(3, even)	U(4, even)
	D(0, odd)	D(1, odd)	D(2, odd)	D(3, odd)	D(4, odd)	D(5, odd)	D(6, odd)	D(7, odd)
	U(5, even)	U(6, even)	U(7, even)	U(0, odd)	U(1, odd)	U(2, odd)	U(3, odd)	U(4, odd)
	D(0, even)	D(1, even)	D(2, even)	D(3, even)	D(4, even)	D(5, even)	D(6, even)	D(7, even)
	U(5, odd)	U(6, odd)	U(7, odd)	U(0, even)	U(1, even)	U(2, even)	U(3, even)	U(4, even)
	D(0, odd)	D(1, odd)	D(2, odd)	D(3, odd)	D(4, odd)	D(5, odd)	D(6, odd)	D(7, odd)
	U(5, even)	U(6, even)	U(7, even)	U(0, odd)	U(1, odd)	U(2, odd)	U(3, odd)	U(4, odd)

D(i, j) Downlink time slot i, burst j

U(i, j) Uplink time slot i, burst j

☐ Bursts during which uplink speech transmission occurs

☐ Bursts on which a downlink talkspurt may start

FIG. 26

		Time slots						
Frames	D(0, 0) U(5, 7)	D(1, 0) U(6, 7)	D(2, 0) U(7, 7)	D(3, 0) U(0, 0)	D(4, 0) U(1, 0)	D(5, 0) U(2, 0)	D(6, 0) U(3, 0)	D(7, 0) U(4, 0)
	D(0, 1) U(5, 0)	D(1, 1) U(6, 0)	D(2, 1) U(7, 0)	D(3, 1) U(0, 1)	D(4, 1) U(1, 1)	D(5, 1) U(2, 1)	D(6, 1) U(3, 1)	D(7, 1) U(4, 1)
	D(0, 2) U(5, 1)	D(1, 2) U(6, 1)	D(2, 2) U(7, 1)	D(3, 2) U(0, 2)	D(4, 2) U(1, 2)	D(5, 2) U(2, 2)	D(6, 2) U(3, 2)	D(7, 2) U(4, 2)
	D(0, 3) U(5, 2)	D(1, 3) U(6, 2)	D(2, 3) U(7, 2)	D(3, 3) U(0, 3)	D(4, 3) U(1, 3)	D(5, 3) U(2, 3)	D(6, 3) U(3, 3)	D(7, 3) U(4, 3)
	D(0, 4) U(5, 3)	D(1, 4) U(6, 3)	D(2, 4) U(7, 3)	D(3, 4) U(0, 4)	D(4, 4) U(1, 4)	D(5, 4) U(2, 4)	D(6, 4) U(3, 4)	D(7, 4) U(4, 4)
	D(0, 5) U(5, 4)	D(1, 5) U(6, 4)	D(2, 5) U(7, 4)	D(3, 5) U(0, 5)	D(4, 5) U(1, 5)	D(5, 5) U(2, 5)	D(6, 5) U(3, 5)	D(7, 5) U(4, 5)
	D(0, 6) U(5, 5)	D(1, 6) U(6, 5)	D(2, 6) U(7, 5)	D(3, 6) U(0, 6)	D(4, 6) U(1, 6)	D(5, 6) U(2, 6)	D(6, 6) U(3, 6)	D(7, 6) U(4, 6)
	D(0, 7) U(5, 6)	D(1, 7) U(6, 6)	D(2, 7) U(7, 6)	D(3, 7) U(0, 7)	D(4, 7) U(1, 7)	D(5, 7) U(2, 7)	D(6, 7) U(3, 7)	D(7, 7) U(4, 7)
	D(0, 0) U(5, 7)	D(1, 0) U(6, 7)	D(2, 0) U(7, 7)	D(3, 0) U(0, 0)	D(4, 0) U(1, 0)	D(5, 0) U(2, 0)	D(6, 0) U(3, 0)	D(7, 0) U(4, 0)
	D(0, 1) U(5, 0)	D(1, 1) U(6, 0)	D(2, 1) U(7, 0)	D(3, 1) U(0, 1)	D(4, 1) U(1, 1)	D(5, 1) U(2, 1)	D(6, 1) U(3, 1)	D(7, 1) U(4, 1)

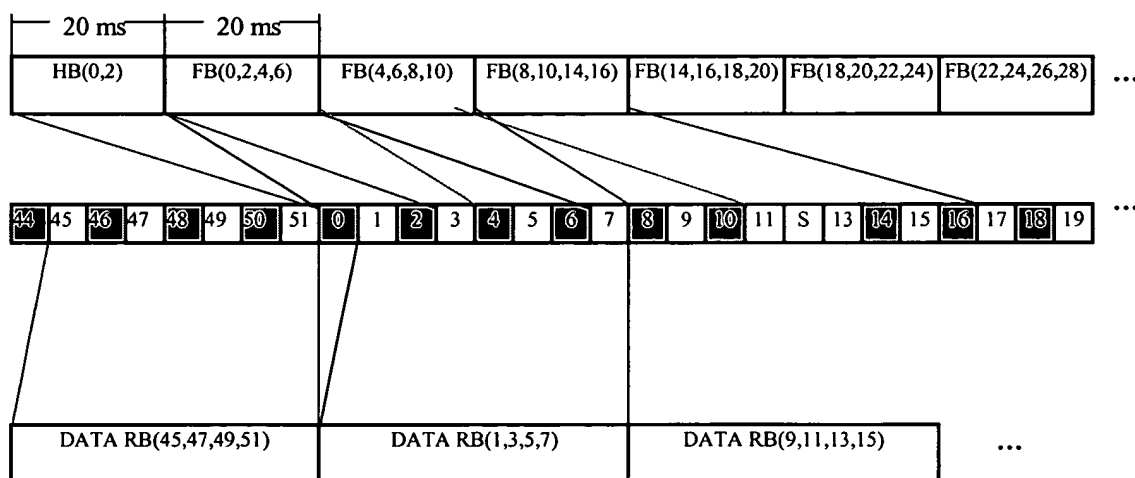
D(i, j) Downlink time slot i, burst j

$U(i, j)$ Uplink time slot i , burst j

 Bursts during which uplink speech transmission occurs

Bursts on which a downlink talkspurt may start

FIG. 27



HB(i,j) Half Block for speech coded and interleaved over bursts i and j

FB(i,j,k,l) Full Block for speech coded and interleaved over bursts i, j, k and l

S SACCH burst for half rate speech traffic channel

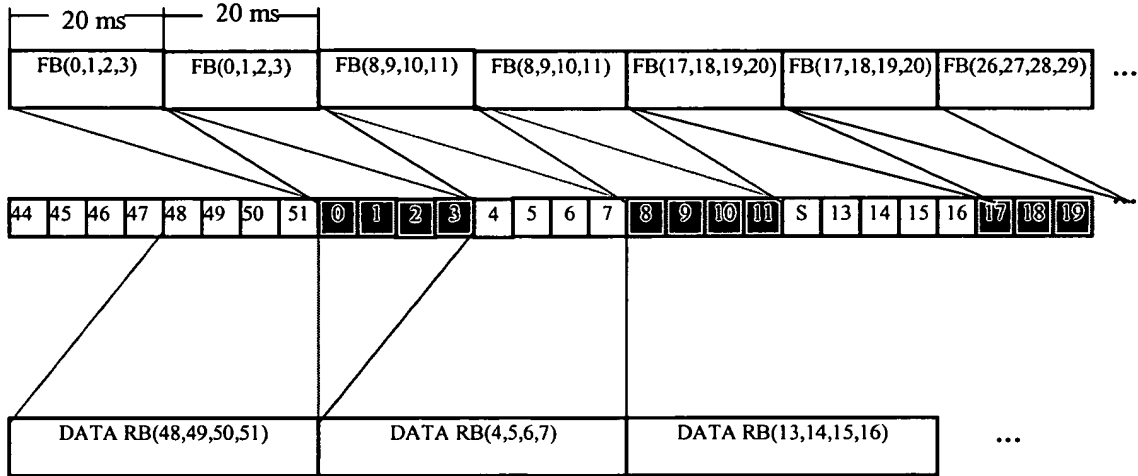
RB	Radio Block
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FIG. 28

Speech Frame Number	0246/1357 Interleaving		0123/4567 Interleaving	
	Arrival at Receiver (ms)	Play Out (ms)	Arrival at Receiver (ms)	Play Out (ms)
0	9.23	14	13.845	14
1	27.69	34	13.845	34
2	46.15	54	50.765	54
3	73.84	74	50.765	74
4	92.3	94	92.3	94
5	110.76	114	92.3	114
6	129.22	134	133.835	134

Table: Speech frame arrivals and play out instants with different interleaving approaches; the end of burst 0 occurs at 0.0 ms.

FIG. 29



FB(i,j,k,l) Full Block for speech interleaved over bursts i, j, k and l
S SACCH burst for half rate speech traffic channel
RB Radio Block

FIG. 30